ONE100D/M
Installation Guide

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OneOS operating system

The OneOS is a feature-rich operating system that guarantees a common feature set across the different OneAccess product lines and a uniform support by maintenance and management tools.

The OneOS manual, which is a separate manual, describes the features of the latest version of the OneOS operating system.

Your feedback

Your satisfaction about this purchase is an extremely important priority to all of us at OneAccess. Accordingly, all electronic, functional and cosmetic aspects of this new unit have been carefully and thoroughly tested and inspected. If any fault is found with this unit or should you have any other quality-related comment concerning this delivery, please submit the Quality Comment Form on our web page at www.oneaccess-net.com/telindus → Support.

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1 Safety instructions

This chapter gives some important safety instructions to take into account when using and installing the ONE100D/M. The following gives an overview of this chapter:

- 1.1 - Safety information on page 7
- 1.2 - Unpacking on page 8
- 1.3 - Selecting a site on page 8
- 1.4 - Connection precautions on page 9
- 1.5 - Back panel earth connection on page 10

1.1 Safety information

IMPORTANT SAFETY INSTRUCTIONS

- Disconnect the power supply before installing, adjusting or servicing the unit. Always disconnect the AC input first.
- The external power supply is connected on the rear panel of the device, and may be delivered together with the ONE100D/M.
- To connect the power supply, proceed as follows:
  - Connect the DC input jack from the power supply to the DC 12V power input on the rear panel of the device.
  - Secure the power supply connection by installing the DC power supply cord into the foreseen clip.
  - Connect the power supply to an AC electrical outlet (100-240 VAC). Plugging in the power supply turns the router on.
- Do not use another type of power supply then the one prescribed by OneAccess.
- Over current Protection: This device requires that the building's electrical installation is designed for protection against short-circuit (over-current) protection. A fuse or circuit breaker no larger than 240 VAC, 10A must be used on the phase conductors.

SAFETY WARNING

- To avoid damage to the unit, please observe all procedures described in this chapter.
- It is *essential* that, if a device has got an earth stud on the back panel, that this is effectively connected to earth. Otherwise, in case of electrical problems, other devices connected to the ONE100D/M could be damaged. Also refer to 1.5 - Back panel earth connection on page 10.

Ensure that the unit and its connected equipment all use the same power and ground, to reduce noise interference and possible safety hazards caused by differences in ground or earth potentials.

1.2 Unpacking

Checking the shipping carton

Rough handling during shipping causes most early failures. Before installation, check the shipping carton for signs of damage:

- If the shipping carton is damaged, please place a claim with the carrier company immediately.
- If the shipping carton is undamaged, do not dispose of it in case you need to store the unit or ship it in the future.

1.3 Selecting a site

WARNING

Always place the unit on its feet without blocking the air vents.

Install the unit in an area free of extreme temperatures, humidity, shock and vibration. Position it so that you can easily see and access the front panel and its control indicators. Leave enough clearance at the back for cables and wires. Position the unit within the correct distances for the different accesses and within 2m of a power outlet.

1.4 Connection precautions

ESD WARNING

The circuit boards are sensitive to electrostatic discharges (ESD) and should be handled with care. It is advisable to ensure an optimal electrical contact between yourself, the working area and a safety ground before touching any circuit board. Take special care not to touch any component or connector on the circuit board.

EMC WARNING

The OneAccess access products are fully EMC compliant. To ensure compliance with EMC directive 89/336/EEC, shielded cables or ferrite beads have to be used.

NOTE

This unit may be powered by an IT power system.

The connectors of the ONE100D/M should only be connected to the following circuit types:

Connector	Connector label	Connector type	Circuit type
SHDSL	SHDSL	RJ45	TNV-1
LAN interface[1]	ETHERNET/SWITCH	RJ45	SELV
PSTN interface[2]	PSTN	RJ45	TNV-1
RS232 Interface[3]	Console	RJ45	SELV
FXS Interface	FXS	RJ45	TNV-2
FXO Interface	FXO	RJ45	TNV-3
T0/S0 interface	ISDN BRI	RJ45	TNV-3
Earth stud		Clinching stud	Earth

1. 10/100 Mbps interface
2. V.32(bis)/V.34/V.90/V.92
3. V.24

- SELV (Safety Extra Low Voltage): local connection (e.g. PC to ONE100D/M) or leased line inside the building.
- TNV-1 (Telecom Network Voltage): telephone line, leased line outside the building.
- TNV-2: PSTN from PABX inside the building; Telecommunications Network Voltage.
- TNV-3: PSTN from operator PABX outside the building.

1.5 Back panel earth connection

Safety

Some versions of the ONE100D/M might be equipped with enhanced protection components, and have an earth stud on the back panel.

It is *essential* that, if a device has got an earth stud on the back panel, that this is effectively connected to earth. Otherwise, in case of electrical problems, other devices connected to the ONE100D/M could be damaged.

Earth Connection

To connect an earth wire to the clinching stud on the back panel, use:

- 2 round M3 washers; these are delivered with the ONE100D/M.
- 1 M3 nut; this is also delivered with the ONE100D/M.
- 1 M3 ring tongue; this is *not* delivered with the ONE100D/M.

Proceed as follows:

Step	Action
1	Slide one of the round M3 washers over the clinching stud.
2	If not already done so, the earth cable that will be connected to the clinching stud, must be equipped with an M3 ring tongue.
3	Slide the M3 ring tongue of the earth cable over the clinching stud.
4	Slide the second M3 round washer over the clinching stud.
5	Use the M3 nut to fix everything; make sure it is firmly fixed.

2 Directives and standards

This chapter details the list of standards, which the ONE100D/M complies with. The following gives an overview of this chapter:

- 2.1 - Statements on page 13
- 2.2 - Environmental information on page 14
- 2.3 - Safety compliance on page 15
- 2.4 - Over-voltage and over-current protection compliance on page 15
- 2.5 - EMC compliance on page 15
- 2.6 - Environmental compliance on page 15

2.1 Statements

www.oneaccess-net.com/telindus → Products → choose a product → Downloads → Certificates

Hereby, OneAccess declares that this ONE100D/M complies with the essential requirements and other relevant provisions of Directive 1999/5/EC.

Hierbij verklaart OneAccess dat deze ONE100D/M overeenstemt met de essentiële vereisten en andere relevante bepalingen van Richtlijn 1999/5/EC.

Par la présente, OneAccess déclare que ce ONE100D/M est en conformité avec les exigences essentielles et autres articles applicables de la Directive 1999/5/EC.

Hiermit, OneAccess erklärt daß dieser ONE100D/M in Fügsamkeit ist mit den wesentlichen Anforderungen und anderen relevanten Bereitstellungen von Direktive 1999/5/EC.

Mediante la presente, OneAccess declara que el ONE100D/M cumple con los requisitos esenciales y las demás prescripciones relevantes de la Directiva 1999/5/CE.

A OneAccess declara que o ONE100D/M cumpre os principais requisitos e outras disposições da Directiva 1999/5/EC.

Col presente, OneAccess dichiara che questo ONE100D/M è in acquiescenza coi requisiti essenziali e stipulazioni attinenti ed altre di Direttivo 1999/5/EC.

Με το παρόν η OneAccess δηλώνει ότι το ONE100D/M είναι συμμορφούμενο με τις βασικές απαιτήσεις και με τις υπόλοιπες σχετικές διατάξες της οδηγίας 1999/5/EC.

2.2 Environmental information

The crossed-out wheeled bin means that within the European Union the product must be taken to separate collection at the product end of life. This applies to the device but also to any accessories marked with this symbol.
Do not dispose of these products as unsorted municipal waste.
If you need more information on the collection, reuse and recycling systems, please contact your local waste administration. You can also contact us for more information on the environmental specifications of our products.

De doorgestreepte container wil zeggen dat binnen de Europese gemeenschap het product voor gescheiden afvalverzameling moet worden aangeboden aan het einde van de levensduur van het product. Dit geldt voor het toestel, maar ook voor alle toebehoren die van dit symbool voorzien zijn. Bied deze producten niet aan bij het gewone huisvuil.
Indien u meer informatie wenst over de systemen voor inzameling, hergebruik en recyclage, gelieve dan uw lokale afvaldiensten te contacteren. U kan ook ons contacteren wanneer u informatie wenst over de milieu aspecten van onze producten.

Le symbole de la poubelle sur roues barrée d'une croix signifie que ce produit doit faire l'objet d'une collecte sélective en fin de vie au sein de l'Union Européenne. Cette mesure s'applique non seulement à vorte appareil mais également à tout autre accessoire marqué de ce symbole. Ne jetez pas ces produits dans les ordures ménagères non sujettes au tri sélectif.
Si vous souhaitez plus d'information concernant les systèmes de collecte, de réutilisation et de recyclage, veuillez contactez votre service de gestion de déchets local. Vous pouvez également nous contacter pour obtenir plus d'information au sujet des spécifications environnementales de nos produits.

Das Symbol der durchgestrichenen Abfalltonne auf Rädern bedeutet dass das Produkt in der Europäischen Union einer getrennten Mülsammlung zugeführt werden muss. Dies gilt sowohl für das Produkt selbst, als auch für alle mit diesem Symbol gekennzeichneten Zubehörteile. Diese Produkte dürfen nicht über den unsortierten Hausmüll entsorgt werden.
Wenn Sie mehr Informationen brauchen über die Sammlung und Recycling Systemen, bitte konsultieren Sie Ihre örtliche Abfälle Verwaltung. Für mehr Informationen über die Umweltaspekten unserer Produkte, wenden Sie sich an unserer Kundendienst.

2.3 Safety compliance

- EN60950-1 - 1st edition: Safety of information technology equipment, including electrical business equipment.
- Class 1 equipment for Table Tops with 115/230 Vac internal power supply.
- Class 3 equipment for …
  - Table Tops with 115/230 Vac external power supply adapter
  - Table Tops with -48 Vdc internal power supply
  - Card Versions.

2.4 Over-voltage and over-current protection compliance

The over-voltage and over-current protection complies with ITU-T K.44 and ETSI ETS 300 386-2 recommendations.

2.5 EMC compliance

- EN55022 B Emissions
- EN55024 Immunity
- EN61000-3-2 Harmonics
- EN61000-3-3 Voltage fluctuations and flicker
- EN61000-4-2 ESD
- EN61000-4-3 Radiated immunity
- EN61000-4-4 EFT/burst
- EN61000-4-5 Surge
- EN61000-4-6 Conducted immunity
- EN61000-4-8 Power magnetic field immunity
- EN61000-4-11 Voltage dips & drops
- ENV50204 Radiated immunity against digital radio telephone
- EN300386 V.1.3.3 Ems Requirements

2.6 Environmental compliance

- Storage conditions: ETSI ETS 300 019-1-1 Class 1.1. In addition, the storage temperature has to be between -25 to +70°C
- Transport conditions: ETSI ETS 300 019-1-2 Class 2.3
- Stationary use conditions: ETSI ETS 300 019-1-3 Class 3.2. In addition, a relative humidity between 0 to 95% non-condensing and an ambient operational temperature between -10 to 50°C is supported.
- Maximum altitude: 3000m
- International protection (IP) class of protection against solid and liquids: IP40
- In use: Temperature Controlled.
  - Test specification (Part1 Classification of environmental conditions):
    - › Class T3.1 (normal)
    - › Class T3.1 (exceptional)

3 Router description

This chapter describes the ONE100D/M front and rear panels, and the associated technical characteristics. The following gives an overview of this chapter:

- 3.1 - What is the ONE100D/M? on page 17
- 3.2 - ONE100D/M Router family overview on page 19
- 3.3 - Hardware description on page 20
- 3.4 - The front panel LED indicators on page 21
- 3.5 - Rear view of the ONE100D/M on page 24
- 3.6 - The ONE100D/M motherboard on page 34

3.1 What is the ONE100D/M?

The ONE100D/M is a voice enabled SHDSL router. It connects phones, faxes, PABX and LAN stations to the network. The router relies on the robust OneOS software, the OneAccess IP software designed for the delivery of enterprise grade services such as VoIP, SIP PBX, Quality of Service, IP VPN and Wireless LAN.

High Speed DSL Access

The ONE100D/M includes a SHDSLbis interface up to 4 copper pairs. This provides line rates up to 22Mbps on short distances and up to 10Mbps on operator standard loop lengths. The various pair bonding techniques make it suitable for any type of DSL infrastructure. The symmetrical line rates of SHDSL perfectly meet the traffic profile of business users.

Reliable Voice Solution

The ONE100D/M offers a complete and proven voice over packet solution. With various signalling protocols (H.323; MGCP and SIP) and flexible voice routing, the One100 D/M is a secure choice in evolving networks.
Delivering a high-quality VoIP network is a great challenge for carriers with many vendors and network equipment pieces being involved. Troubleshooting is accelerated by the ONE100D/M, which embeds voice quality audit functions monitoring voice frame jitter and estimated echo. It also features measurement probes delivering statistics about the network quality of service.

Full Service Gateway

As communication over the internet is cheaper than other alternatives, companies use or want to use it not only for browsing and e-mail, but also for many other services like business processes between offices and with home workers, web hosting, voice and video communication. On their local network they need wired and wireless access. To support all these services in a secure and reliable manner in one box, they need a full service gateway. Based on the OneOS software the ONE100D/M is a full service gateway for businesses with data and voice needs.
The ONE100D/M provides secured Internet access through a stateful inspection firewall. Employees working at home and personnel on the road can use the business applications based on central databases through IP VPNs.
The ONE100D/M also supports network based VPNs based on MPLS / IP and on VPLS / VLAN technology. It provides best-in-class IP Quality of Service features including real-time processing of high priority, delay sensitive applications and guaranteed bandwidth for selected flows. Each of the 4 LAN ports can be reserved for a server. Specific policies can be applied per port. The optional wireless LAN gives access to different types of users. Several user authentication schemes and policy based routing can be applied so that a public hotspot service can be offered while securing the company’s LAN from intrusions.

Accelerated Deployment And Service Provision

As all ONE products, the ONE100D/M uses the Industry standard Command Line Interface (CLI). This facilitates the configuration management for the service provider's technicians and integrates rapidly with automated tools. Several auto discovery and update features make the network roll-out straightforward.
Technicians or the customer install the units with a standard configuration. Once connected to the network the ONE100D/M automatically retrieves all customer specific information from the service provider's databases and thus becomes ready for the service. A set of embedded tools and service level indicators enable responsive customer support. On the other hand a web based user interface provides the customer with all the service information that relevant to him.

3.2 ONE100D/M Router family overview

Different versions exist of the OneAccess. The name of each version indicates the hardware characteristics according to the following table:

Characters	Description
D	2 pair SHDSL
M	4 pair SHDSL
W	WIFI option (b/g)
S	Encryption (incl. hardware accelerator); otherwise only DES software encryption
5E	A 4 port Ethernet switch and an extra Ethernet interface.
-B	1 BRI
-2B	2 BRI
-4B	4 BRI
-2V	2 FXS
-4V	4 FXS
-8V	8 FXS
-O	1 FXO

Example

ONE100-2B-2V-SD5E

This is a One100, with:

- 2 BRI interfaces
- 2 FXS interfaces
- a hardware accelerator for encryption
- 2 SHDSL line pairs
- a 4 port Ethernet switch and 1 ethernet interface

3.3 Hardware description

The ONE100D/M motherboard is equipped with the following interfaces:

- SHDSL line connector
- Console port
- Managed switch with 4 ports
- Additional Ethernet port
- WLAN 802.11b/g

For more information, refer to 4.1 - The different connectors on the back panel of the ONE100D/M on page 37.

Optional extra connectors are:

- ISDN BRI connectors.
- FXS voice connectors. Note that the ONE100D/M can treat up to 8 simultaneous voice channels.
- FXO voice connector.

3.4 The front panel LED indicators

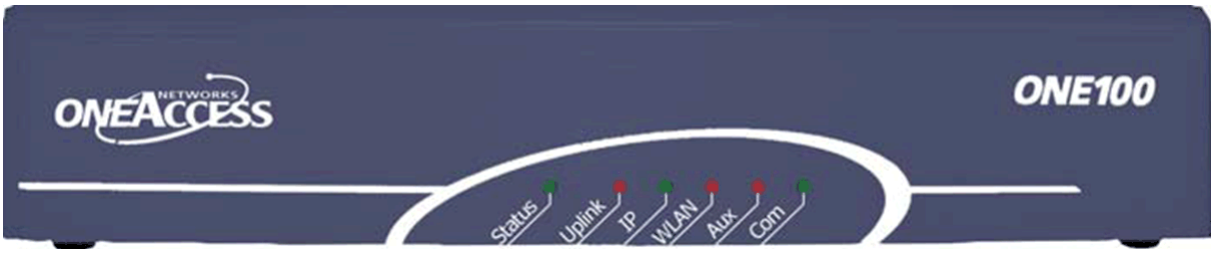
This section gives an overview of the front panel LEDs and what they indicate. The following gives an overview of this section:

- 3.4.1 - Introducing the front panel LEDs on page 22
- 3.4.2 - LED states on page 23

3.4.1 Introducing the front panel LEDs

When all the connections are made and the ONE100D/M is powered, the LEDs on the front panel reflect the actual status of the device.

The following figure shows the front panel LED indicators of the ONE100D/M:



LED states

One front panel LED can reflect different status modes by the way it lights up. The front panel LEDs can light up as follows:

LED state	LED duty cycle	Description
OFF	0 %	The LED never lights up.
ON	100 %	The LED lights up continuously.
blinking	50 %	The LED is as much lit as it is out.
flashing	75 %	The LED lights up during 75% of the time, i.e. 1,5 seconds ON and 0,5 seconds OFF.

3.4.2 LED states

The state of the LEDs indicates the following:

LED name	Colour	Description
Status	Bicolour	• OFF: No input power. • ON - green: Switched on and operational. • ON - red: Switched on and not operational. • Blinking green: (Re)boot in progress.
Uplink	Bicolour	• OFF: None of the uplink interfaces (SHDSL, mobile, ISDN data backup) is configured. • ON - green: The SHDSL uplink is synchronised. • ON - red: None of the uplinks is synchronised (although at least one configured). • Blinking green: None of the uplinks is synchronised but at least one uplink synchronisation is in progress. • Flashing green: The SHDSL uplink is not synchronised, but a backup interface (ISDN or Mobile) is up.
IP	Bicolour	• OFF: No IP routing has been configured. • ON - green: All IP interfaces on the SHDSL link are up • ON - red: All IP interfaces are down • Blinking green: At least one IP interface is up and at least one is not up on the active uplink. • Flashing green: All IP interfaces on the backup link (ISDN or Mobile) are up.
WLAN	Green	• OFF: Not in use. • ON - green: The WLAN interface is up. • Blinking green: Traffic in progress.
Aux	Bicolour	• OFF: Not configured for voice service. • ON - green: Configured and operational voice service. • ON - red: Malfunction in the voice service. • Blinking green: Voice service is configured, verification of voice function in progress.
Com	Green	• OFF: There is no voice communication on any of the voice ports. • ON - green: There is voice communication on one of the voice ports.

3.5 Rear view of the ONE100D/M

This section describes the various types of ONE100D/M rear panels, so that the user can identify the interface type and port numbering.

The following gives an overview of the different models of the ONE100D/M:

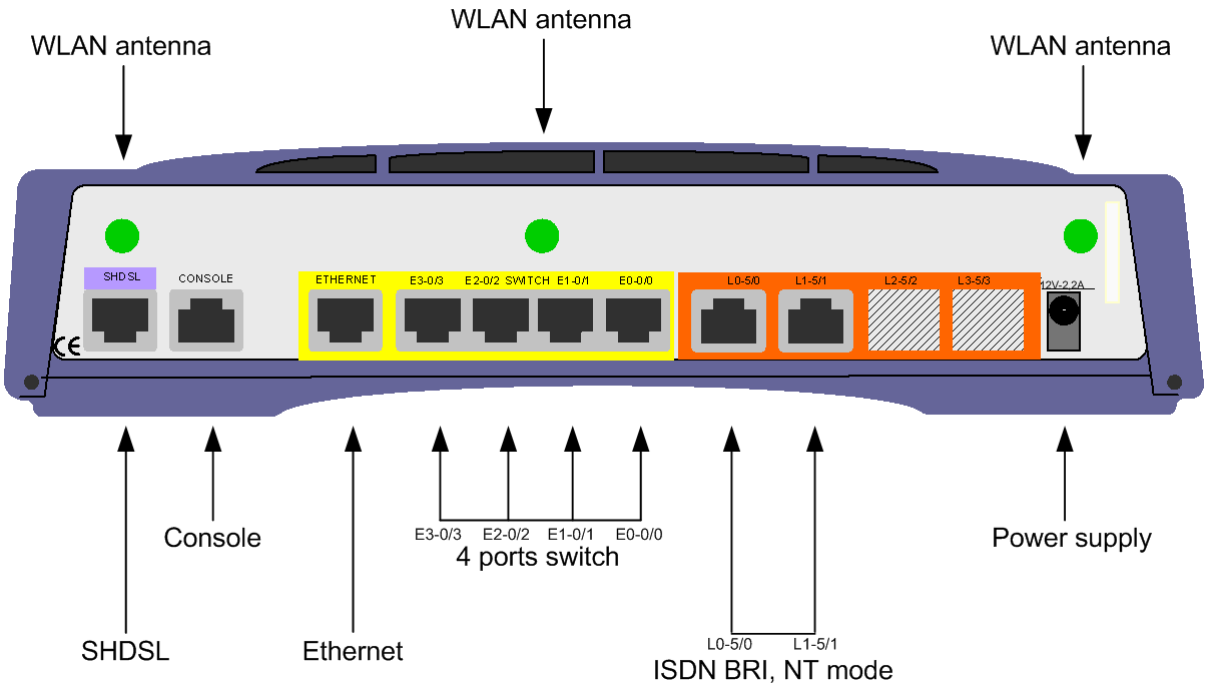
- One100D/M-2B-W on page 25
- One100D/M-2B-2B-W on page 26
- One100D/M-4B-W on page 27
- One100D/M-4B-4B-W on page 28
- One100D/M-2V-W on page 29
- One100D/M-2B-2V-W on page 30
- One100 D/M-4B-2V-W on page 31
- One100D/M-4V-W on page 32
- One100D/M-8V-O-W on page 33

For a description of the meaning of the different model names, refer to 3.2 - ONE100D/M Router family overview on page 19, and the following figures.
Note that in this chapter, the connectors that are present on the ONE100D/M by default, are not mentioned in the name of the device, only the optional extra connectors are mentioned in the name.

For a detailed description of the function of the different connectors, refer to 4.1 - The different connectors on the back panel of the ONE100D/M on page 37.

One100D/M-2B-W

The following figure shows the back panel of a ONE100D/M with 2 BRI connectors:

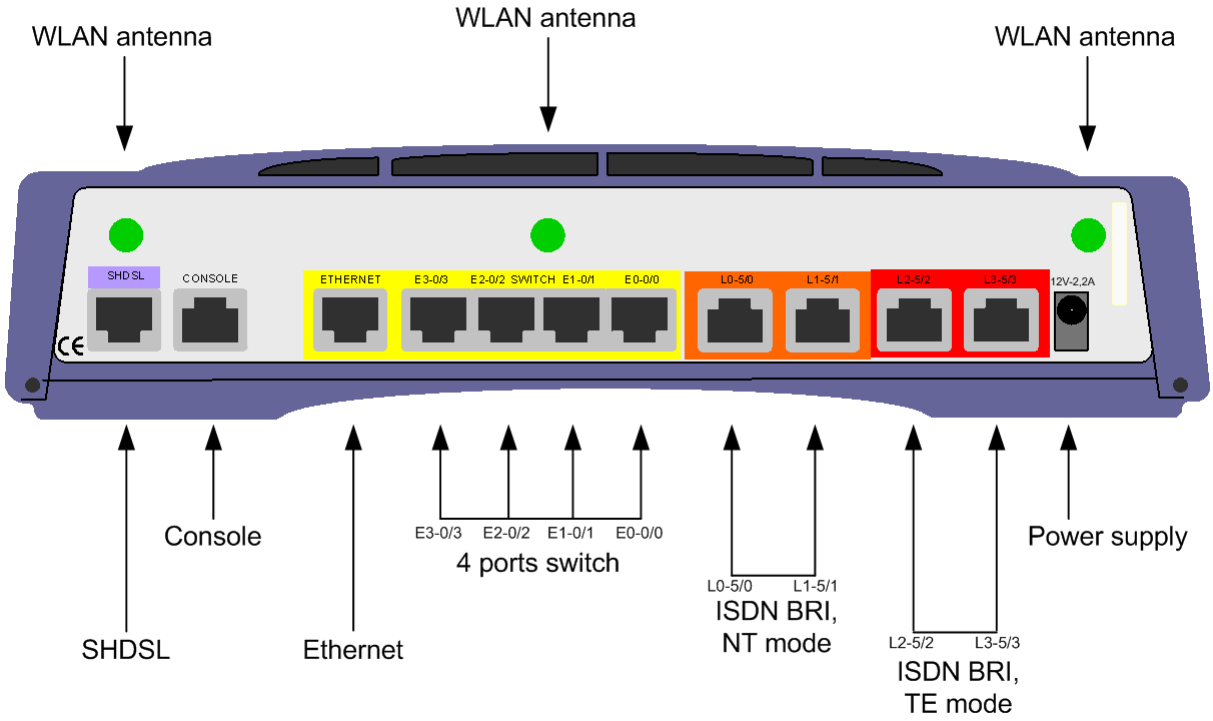


Following connectors are present:

Connector(s)	Label	Type	Function
SHDSL	SHDSL	RJ45	SHDSL line connector
Console	CONSOLE	RJ45	V.24 DTE interface
Ethernet	ETHERNET	RJ45	Ethernet LAN connector
4 port Ethernet switch	SWITCH – E0-0/0 - E3-0/3	RJ45	Ethernet LAN connectors
ISDN	ISDN BRI – L0-5/0 - L1-5/1	RJ45	ISDN connection, NT mode
WLAN	-	SMA	Wireless LAN connectors
Power	12V-2,2A	DC input jack	Power input

One100D/M-2B-2B-W

The following figure shows the back panel of a ONE100D/M with 2 BRI connectors for NT mode, and 2 BRI connectors for TE mode:

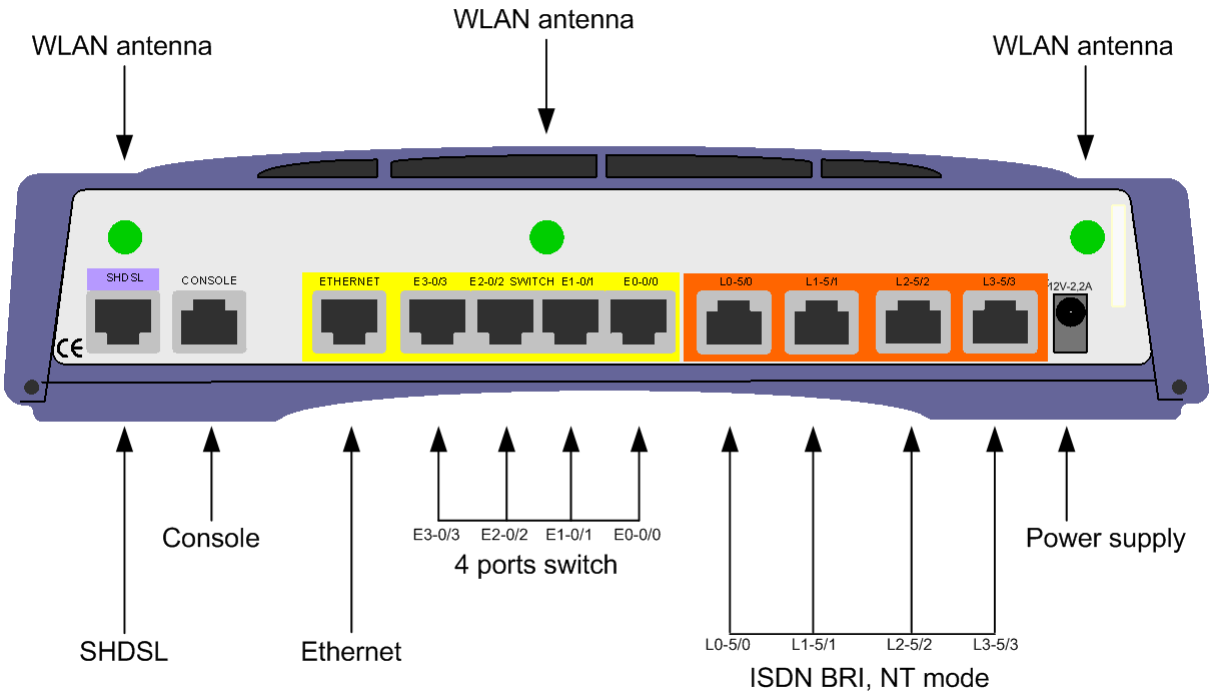


Following connectors are present:

Connector(s)	Label	Type	Function
SHDSL	SHDSL	RJ45	SHDSL line connector
Console	CONSOLE	RJ45	V.24 DTE interface
Ethernet	ETHERNET	RJ45	Ethernet LAN connector
4 port Ethernet switch	SWITCH – E0-0/0 - E3-0/3	RJ45	Ethernet LAN connectors
ISDN	ISDN BRI – L0-5/0 - L1-5/1	RJ45	ISDN connection, NT mode
ISDN	ISDN BRI – L2-5/2 - L3-5/3	RJ45	ISDN connection, TE mode
WLAN	-	SMA	Wireless LAN connectors
Power	12V-2,2A	DC input jack	Power input

One100D/M-4B-W

The following figure shows the back panel of a ONE100D/M with 4 BRI connectors for NT mode:

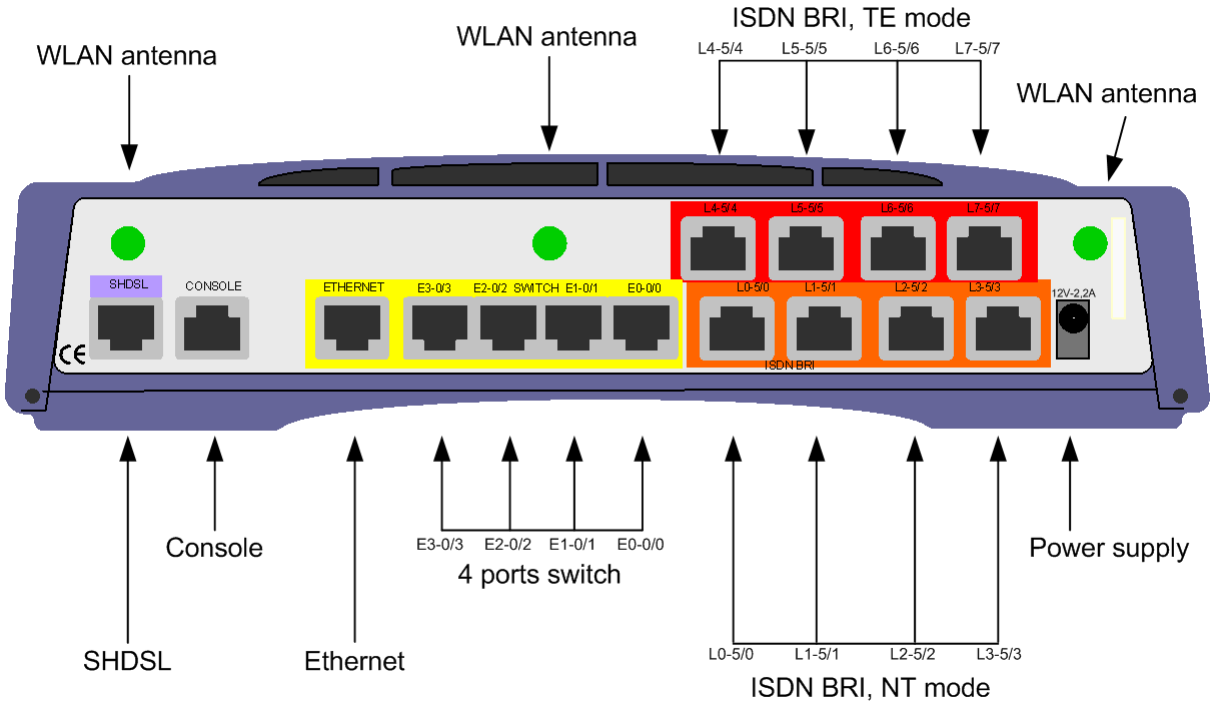


Following connectors are present:

Connector(s)	Label	Type	Function
SHDSL	SHDSL	RJ45	SHDSL line connector
Console	CONSOLE	RJ45	V.24 DTE interface
Ethernet	ETHERNET	RJ45	Ethernet LAN connector
4 port Ethernet switch	SWITCH – E0-0/0 - E3-0/3	RJ45	Ethernet LAN connectors
ISDN	ISDN BRI – L0-5/0 - L3-5/3	RJ45	ISDN connection, NT mode
WLAN	-	SMA	Wireless LAN connectors
Power	12V-2,2A	DC input jack	Power input

One100D/M-4B-4B-W

The following figure shows the back panel of a ONE100D/M with 4 BRI connectors for NT mode and 4 BRI connectors for TE mode:

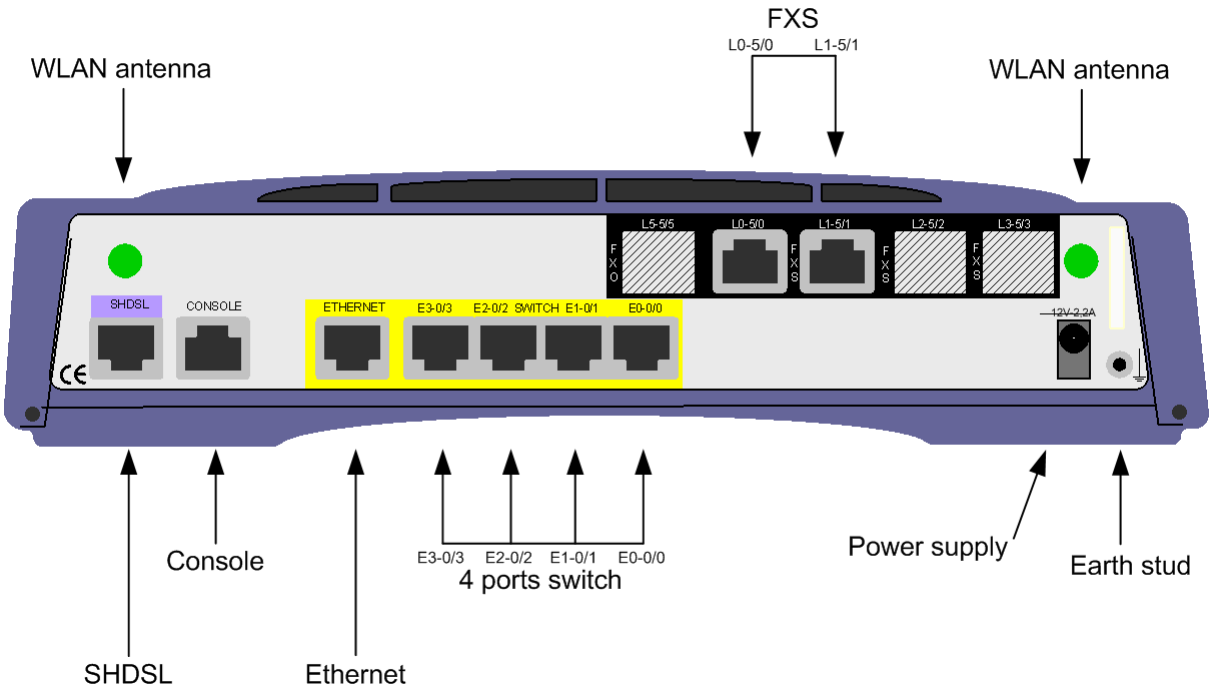


Following connectors are present:

Connector(s)	Label	Type	Function
SHDSL	SHDSL	RJ45	SHDSL line connector
Console	CONSOLE	RJ45	V.24 DTE interface
Ethernet	ETHERNET	RJ45	Ethernet LAN connector
4 port Ethernet switch	SWITCH – E0-0/0 - E3-0/3	RJ45	Ethernet LAN connectors
ISDN	ISDN BRI – L0-5/0 - L3-5/3	RJ45	ISDN connection, NT mode
ISDN	ISDN BRI – L4-5/4 - L7-5/7	RJ45	ISDN connection, TE mode
WLAN	-	SMA	Wireless LAN connectors
Power	12V-2,2A	DC input jack	Power input

One100D/M-2V-W

The following figure shows the back panel of a ONE100D/M with 2 FXS voice connectors:



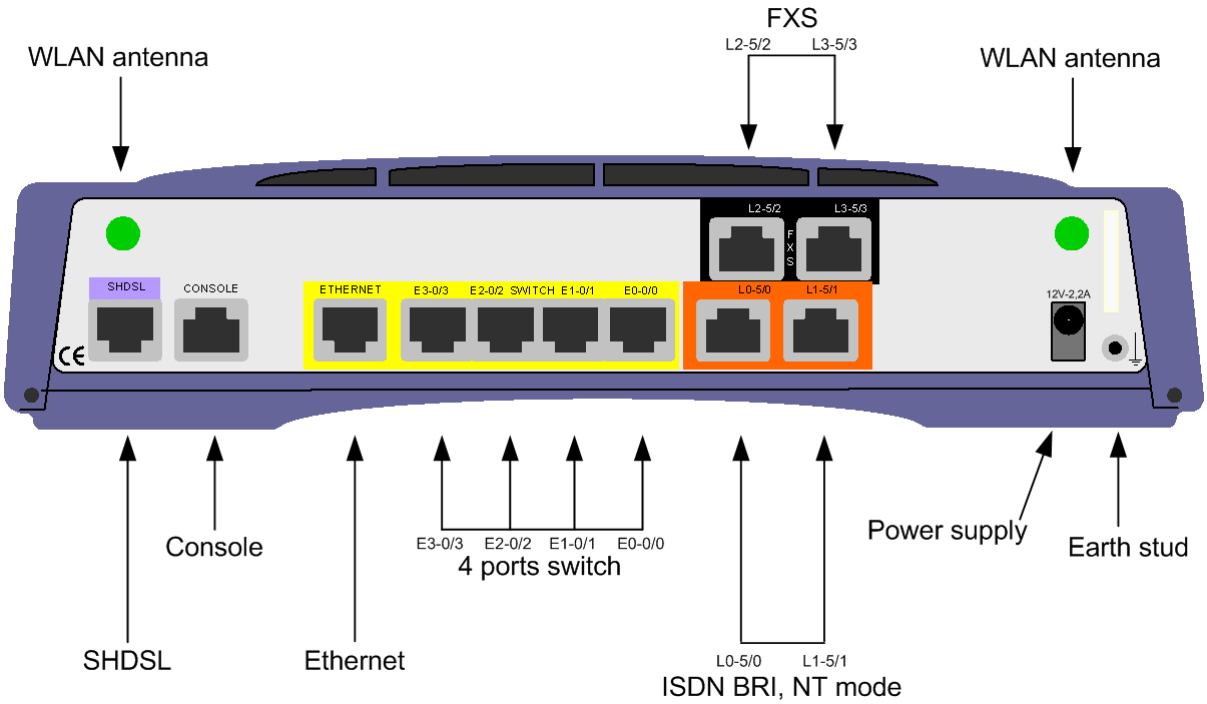
Following connectors are present:

Connector(s)	Label	Type	Function
SHDSL	SHDSL	RJ45	SHDSL line connector
Console	CONSOLE	RJ45	V.24 DTE interface
Ethernet	ETHERNET	RJ45	Ethernet LAN connector
4 port Ethernet switch	SWITCH – E0-0/0 - E3-0/3	RJ45	Ethernet LAN connectors
FXS	FXS – L0-5/0 – L1-5/1	RJ45	2 analog telephone interfaces
WLAN	-	SMA	Wireless LAN connectors
Power	12V-2,2A	DC input jack	Power input
Earth stud	-	Clinching stud	Earth connection

Note that an earth stud is also present on the back panel.

One100D/M-2B-2V-W

The following figure shows the back panel of a ONE100D/M with 2 BRI connectors for NT mode and 2 FXS voice interfaces:



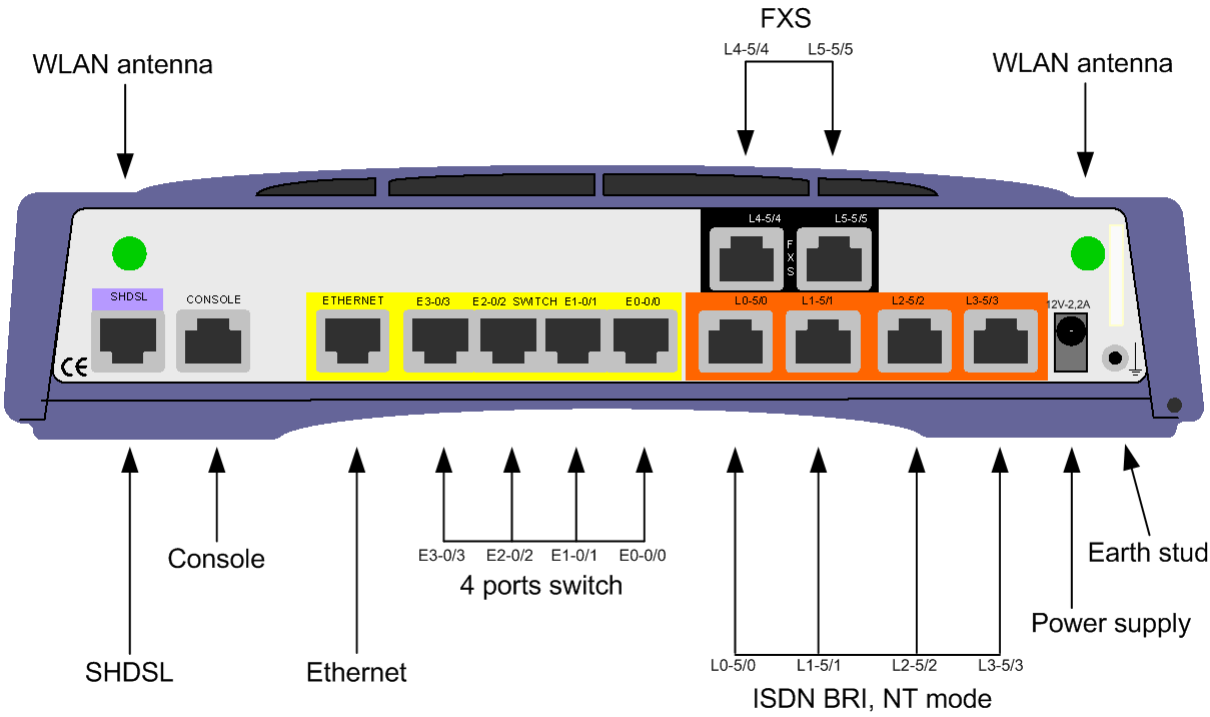
Following connectors are present:

Connector(s)	Label	Type	Function
SHDSL	SHDSL	RJ45	SHDSL line connector
Console	CONSOLE	RJ45	V.24 DTE interface
Ethernet	ETHERNET	RJ45	Ethernet LAN connector
4 port Ethernet switch	SWITCH – E0-0/0 - E3-0/3	RJ45	Ethernet LAN connectors
ISDN	ISDN BRI – L0-5/0 - L1-5/1	RJ45	ISDN connection, NT mode
FXS	FXS – L2-5/2 – L3-5/3	RJ45	2 analog telephone interfaces
WLAN	-	SMA	Wireless LAN connectors
Power	12V-2,2A	DC input jack	Power input
Earth stud	-	Clinching stud	Earth connection

Note that an earth stud is also present on the back panel.

One100 D/M-4B-2V-W

The following figure shows the back panel of a ONE100D/M with 4 BRI connectors for NT mode and 2 FXS voice interfaces:



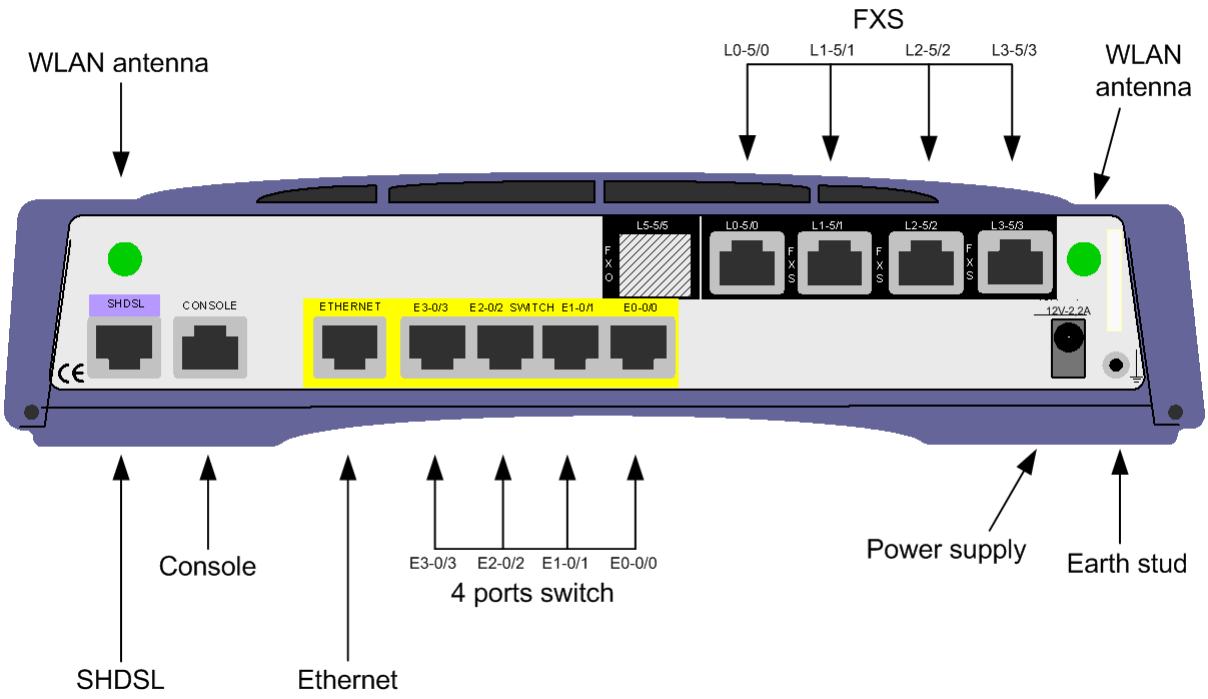
Following connectors are present:

Connector(s)	Label	Type	Function
SHDSL	SHDSL	RJ45	SHDSL line connector
Console	CONSOLE	RJ45	V.24 DTE interface
Ethernet	ETHERNET	RJ45	Ethernet LAN connector
4 port Ethernet switch	SWITCH – E0-0/0 - E3-0/3	RJ45	Ethernet LAN connectors
ISDN	ISDN BRI – L0-5/0 - L3-5/3	RJ45	ISDN connection, NT mode
FXS	FXS – L4-5/4 – L5-5/5	RJ45	2 analog telephone interfaces
WLAN	-	SMA	Wireless LAN connectors
Power	12V-2,2A	DC input jack	Power input
Earth stud	-	Clinching stud	Earth connection

Note that an earth stud is also present on the back panel.

One100D/M-4V-W

The following figure shows the back panel of a ONE100D/M with 4 FXS voice interfaces:



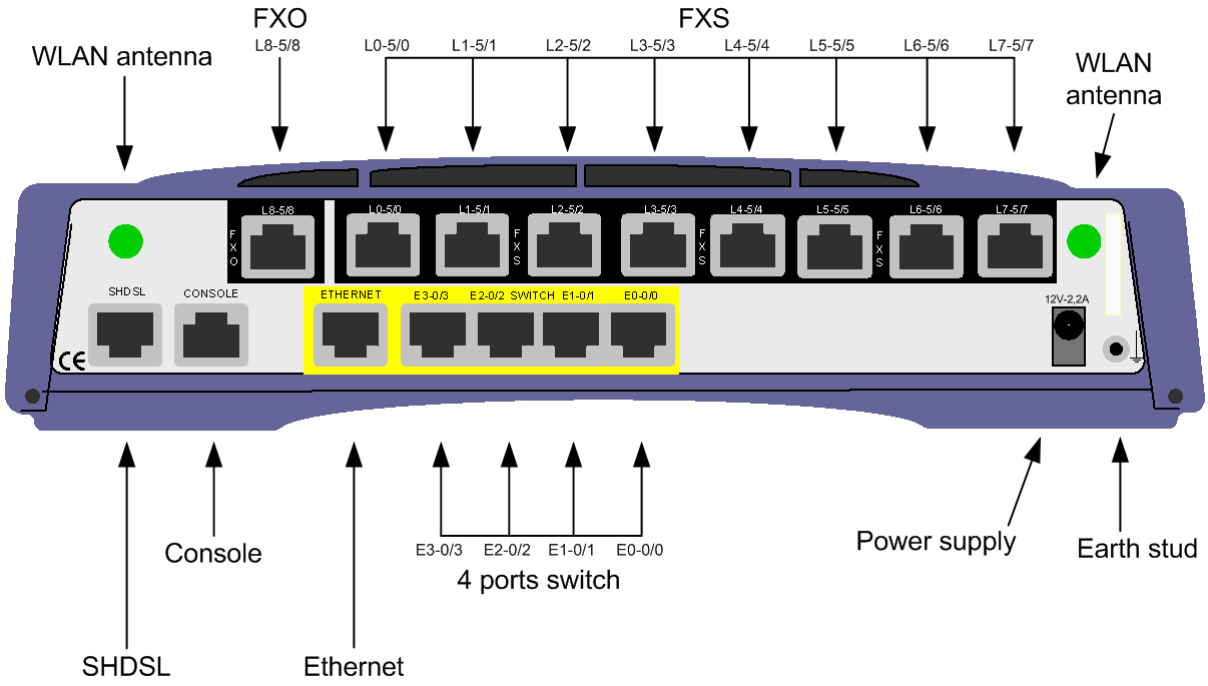
Following connectors are present:

Connector(s)	Label	Type	Function
SHDSL	SHDSL	RJ45	SHDSL line connector
Console	CONSOLE	RJ45	V.24 DTE interface
Ethernet	ETHERNET	RJ45	Ethernet LAN connector
4 port Ethernet switch	SWITCH – E0-0/0 - E3-0/3	RJ45	Ethernet LAN connectors
FXS	FXS – L0-5/0 – L3-5/3	RJ45	4 analog telephone interfaces
WLAN	-	SMA	Wireless LAN connectors
Power	12V-2,2A	DC input jack	Power input
Earth stud	-	Clinching stud	Earth connection

Note that an earth stud is also present on the back panel.

One100D/M-8V-O-W

The following figure shows the back panel of a ONE100D/M with 8 FXS voice interfaces and 1 FXO voice interface:



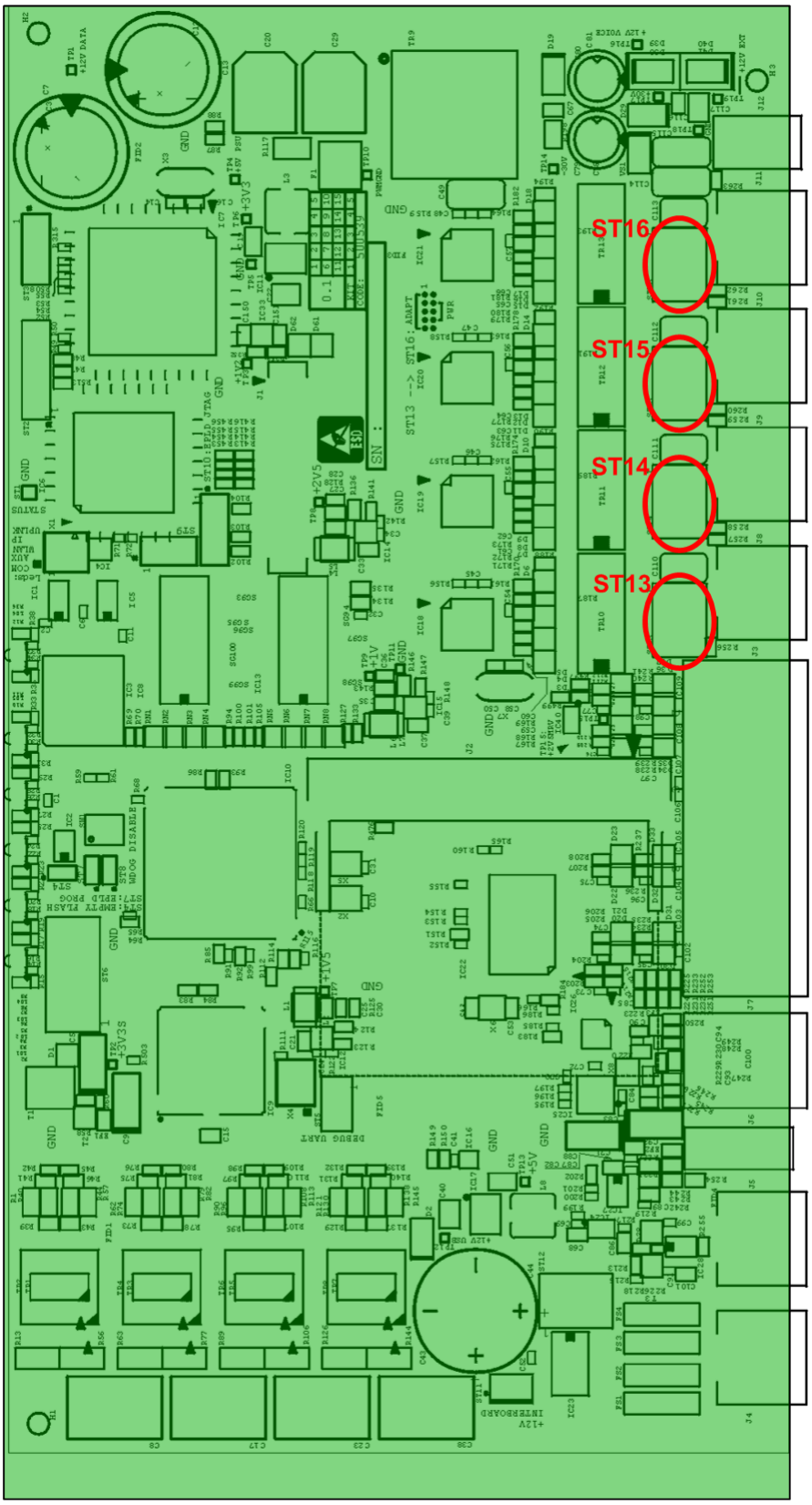
Following connectors are present:

Connector(s)	Label	Type	Function
SHDSL	SHDSL	RJ45	SHDSL line connector
Console	CONSOLE	RJ45	V.24 DTE interface
Ethernet	ETHERNET	RJ45	Ethernet LAN connector
4 port Ethernet switch	SWITCH – E0-0/0 - E3-0/3	RJ45	Ethernet LAN connectors
FXS	FXS - L0-5/0 - L7-5/7	RJ45	8 analog telephone interfaces
FXO	FXO - L8-5/8	RJ45	1 analog telephone interface
WLAN	-	SMA	Wireless LAN connectors
Power	12V-2,2A	DC input jack	Power input
Earth stud	-	Clinching stud	Earth connection

Note that an earth stud is also present on the back panel.

3.6 The ONE100D/M motherboard

The figure below shows the motherboard, and the position of the straps on the ONE100D/M motherboard:



4 Interface description

This chapter gives an overview of the different connectors on the back of the ONE100D/M. The following gives an overview of this chapter:

- 4.1 - The different connectors on the back panel of the ONE100D/M on page 37
- 4.2 - ISDN interface specifications on page 39
- 4.3 - SHDSL line specifications on page 42
- 4.4 - LAN interface specifications on page 43
- 4.5 - WLAN interface specifications on page 44
- 4.6 - 4 port Ethernet switch specifications on page 45
- 4.7 - Console port specifications on page 46
- 4.8 - FXS analog interface specifications on page 47
- 4.9 - FXO analog interface specifications on page 48

4.1 The different connectors on the back panel of the ONE100D/M

Depending on the version of the ONE100D/M, some of these connectors may or may not be present. Refer to 3.5 - Rear view of the ONE100D/M on page 24 for an overview of the different versions that exist.

The following table gives an overview of the possible connectors located at the back of the ONE100D/M and explains their function:

Label	Function
SHDSL	This RJ45 connector is the SHDSL line connector. Connect one side of an SHDSL line cable (not included) to the LINE connector of the ONE100D/M and the other side to an SHDSL outlet. For optimum performance, the used line pairs have to be properly twisted pairs. Refer to 4.3 - SHDSL line specifications on page 42 for the pin lay-out of this connector.
CONSOLE	This RJ45 connector is a V.24 DTE interface. This enables you to manage the ONE100D/M locally. For more information, refer to 4.7 - Console port specifications on page 46.
ETHERNET SWITCH, E0-0/0 ... E3-0/3	These RJ45 connectors are the Ethernet LAN connectors. There are 1+4 Ethernet LAN connectors on the ONE100D/M. The separate Ethernet interface can be used as main WAN link or as a back-up WAN link interface. The Ethernet switch is VLAN manageable. Connect one side of an Ethernet LAN cable (not included) to the LAN connector of the ONE100D/M and the other side to an Ethernet network outlet. Each LAN interface supports 10/100 Mbps auto-sense and auto cross-over. Refer to 4.4 - LAN interface specifications on page 43 for the pin lay-out of this connector.
WLAN	The WLAN antennas are installed in the factory. Please raise them in a vertical position.
ISDN-BRI L0-5/0 ... L7-5/7	These RJ45 connectors are the ISDN connectors. The number of ISDN connectors will vary depending on the model of the ONE100D/M. Connect one side of an ISDN cable (not included) to the ISDN BRI connector(s) of the ONE100D/M and the other side to an ISDN outlet. Refer to 4.2 - ISDN interface specifications on page 39 for the ISDN specifications of this connector.
FXO Lx-5/x	This RJ45 connector is used to connect the telephone line. The ONE100D/M with FXS and FXO interfaces have got an earth stud. This must be permanently connected to the main protective earth.

Label	Function
FXS Lx-5/x ... Ly-5/y	These RJ45 connectors enable the connection of up to 8 analog telephone lines thus providing up to 8 analog voice interfaces. The ONE100D/M with FXS and FXO interfaces have got an earth stud. This must be permanently connected to the main protective earth.
12VDC-2,2A	This is the power input. Insert the plug of the external power supply in this socket. Secure the power supply connection by installing the DC power supply cord into the plastic ring provided on the back panel. Refer to 5.1 - Power requirements on page 51 for the power specifications of the ONE100D/M.
	This is the earth stud. Connect the earth wire to this stud. Refer to 1.5 - Back panel earth connection on page 10 for more information. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.

4.2 ISDN interface specifications

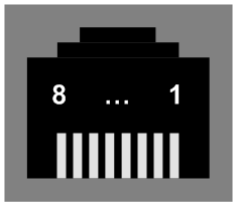
Specifications

- The ONE100D/M motherboard supports up to 4 ISDN interfaces. The interfaces.are of type NT. For use as TE a crossed cable must be used.
- compliant with ITU-T I.430 section 10
- Connector: RJ45 connector, 1 connector per interface
- Cable to be used: shielded cable

- The factory configuration of these interfaces is T0 mode. Do not connect the interfaces with a public ISDN access without ensuring that the strap positions are correct. The product can be irreversibly damaged otherwise.
- You can connect/disconnect the power supply of all ISDN ports by using the command `CLI(voice-port)# [no] power-source-one` without changing the default factory strap settings.
- Cables connected to the T0/S0 (ISDN/BRI) interfaces must always be shielded, in order to respect the environmental norm.

Mother board connectors

The following table shows the connector layout of the RJ45 ISDN connector:

Pin	NT function		Figure
1	not connected	-	
2	not connected	-	
3	Receive A (+)	input	
4	Transmit A (+)	output	
5	Transmit B (-)	output	
6	Receive B (-)	input	
7	not connected	-	
8	not connected	-	

Straps

Every ISDN interface has a strap (ST13, ST14, ST15 ST16) making it possible to configure the following options:

- 100 Ohms impedance adaptation
- Power-feeding for ISDN phones

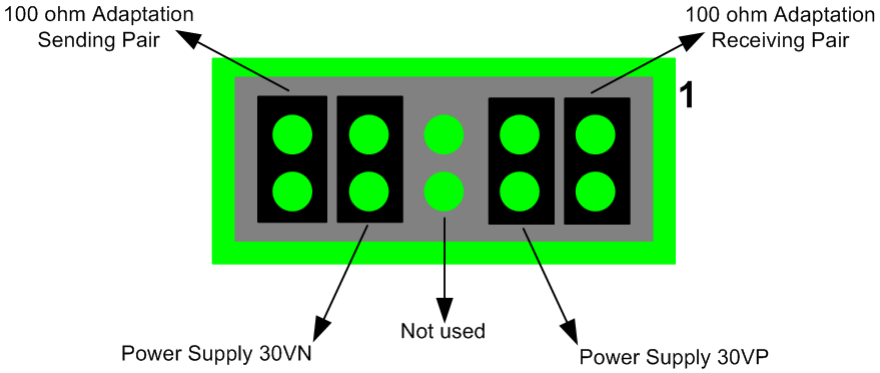
Refer to 3.6 - The ONE100D/M motherboard on page 34 for the position of these straps.

Description

All four straps allow:

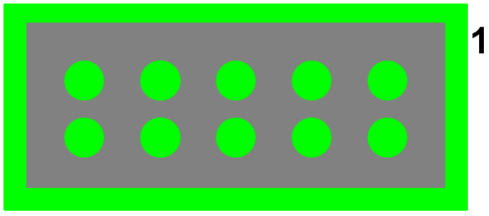
- To connect a 100 Ohms impedance adaptation or not. The straps can be used in sending, in receiving or in both sending and receiving direction.
- To connect the power supply for ISDN terminal (30 volts) or not. Straps operate in pairs:
  - No power feeding: both straps must be removed.
  - With power feeding: both straps must be set.

The following figure illustrates the functions of the straps:

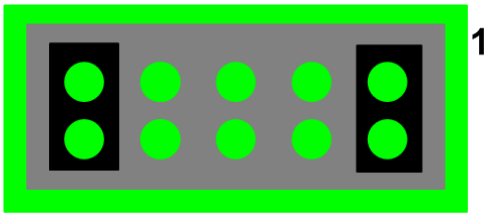


Examples of configurations

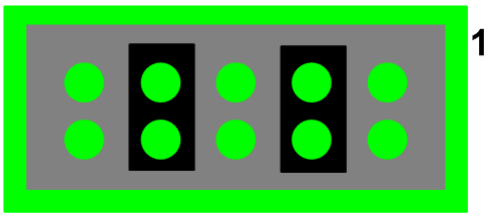
- Configuration 1:

Strap settings	Description
	• 100 Ω impedance adaptation disconnected. • Power feeding for ISDN terminal disconnected.

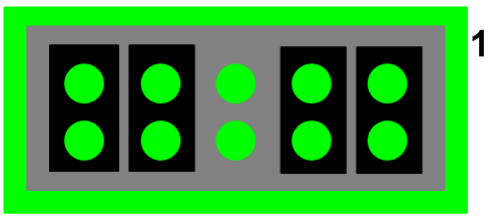
- Configuration 2:

Strap settings	Description
	• 100 Ω impedance adaptation connected, for both transmission and reception. • Power feeding for ISDN terminal disconnected.

- Configuration 3:

Strap settings	Description
	• 100 Ω impedance adaptation disconnected. • Power feeding for ISDN terminal connected.

- Configuration 4:

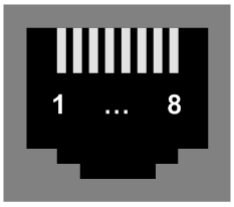
Strap settings	Description
	• 100 Ω impedance adaptation connected, for both transmission and reception. • Power feeding for ISDN terminal connected.

4.3 SHDSL line specifications

- Single pair, dual pair, 4 pair line access
- Connector: RJ45
- Impedance: 135 Ω
- Cable to be used: 2*2*CAT5E twisted pair
- Coding: TCPAM, compliant to ITU-T G.991.2; G.SHDSL, and G.SHDSL.bis via TCPAM-16 and TCPAM-32
- Line speeds:
  - Single pair: 192 … 5696 in steps of 64kbps
  - Two pair: 384 … 11392 in steps of 128kbps
  - Four pair: 768 … 22784 in steps of 256kbps
- Handshaking: compliant G.994.1 (automatic speed negotiation) or fixed speed
- Performance monitoring: compliant G.826 (errored seconds, severely errored seconds, unavailability seconds)

The line connector lay-out

The following table shows the connector layout of the RJ45 line connector:

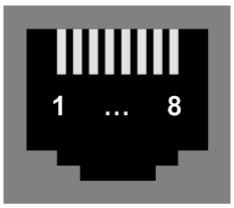
Pin	Signal	Figure
1	line 2	
2	line 2	
3	line 3 (only on the 4P versions)	
4	line 1	
5	line 1	
6	line 3 (only on the 4P versions)	
7	line 4 (only on the 4P versions)	
8	line 4 (only on the 4P versions)	

4.4 LAN interface specifications

- Connector: RJ45 (EIA/TIA 568B)
- Cable to be used: standard Ethernet cable (shielded UTP Cat. 5)
- Applicable standards: IEEE 802.3 (10Mbps Ethernet), IEEE 802.3u (100Mbps Ethernet)
- Speed: 10/100 Mbps auto-sense
- DTE/DCE auto cross-over
- VLAN support (up to 12 VLANs)
- The following LEDs are available built-in on each Ethernet interface connector:

Colour	Description
Green	• OFF: link inactive. • ON: link active.
Yellow	• OFF: no traffic in progress. • ON: traffic in progress.

The following table shows the connector layout of the RJ45 Ethernet LAN interface connector:

Pin	Signal	DTE	DCE	Figure
1	transmit (+)	Out	In	
2	transmit (-)	Out	In	
3	receive (+)	In		
4	not used	-		
5	not used	-		
6	receive (-)	In	Out	
7	not used	-		
8	not used	-		

4.5 WLAN interface specifications

- WIFI version: 802.11b/g
- Compliant with the IEEE 802.11-2005 recommendation
- maximum data rate: 54 Mbits/second
- Operational frequency: 2,4GHz
- Default radio channel: 11
- WEP and WPA encryption

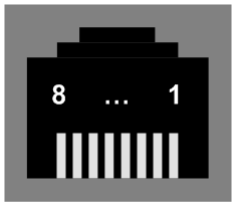
4.6 4 port Ethernet switch specifications

- Number of ports: 4
- Connectors: RJ45 (EIA/TIA 568B)
- Applicable standards: IEEE 802.3 (10Mbps Ethernet), IEEE 802.3u (100Mbps Ethernet)
- Characteristics:
  - 10 / 100 Mbps auto-sense
  - Half or full duplex
  - Auto-negotiation
  - Auto detection of crossover/straight cable (auto MDI/MDIX detection)
- Meaning of LED colours:
  - Lit green LED: link active
  - Blinking yellow LED: traffic in progress
- The layout of the connectors is identical to the LAN interface, refer to 4.4 - LAN interface specifications on page 43: transmission pairs 1-2, receive pairs 3-6
- Cable to be used: shielded crossover/straight cables with 4 twisted pairs

4.7 Console port specifications

- Connector: RJ45 (EIA/TIA 568B)
- Data:
  - RS232
  - 9600 bps
  - 8 data bits
  - no parity
  - 1 stop bit

The following table shows the connector layout of the RJ45 Console connector:

Pin	Abbreviation	Signal	DCE	Figure
1	RD	Received data	Out	
2	TD	Transmitted data	In	
3	GND	Ground	-	
4	NC	Not connected	-	
5	NC	Not connected	-	
6	Cable type		-	
7	RTS	Request To Send	In	
8	CTS	Clear To Send	Out	

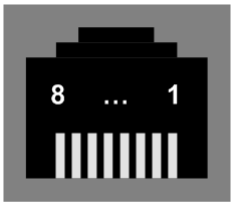
- A console cable for router configuration and maintenance only requires TX, RX and GND to be connected; refer to Annex A: - Console cable on page 64 for more information about the cable.
- If pin 6 is connected to ground (pin 3), the cable is then identified as a cable connected to an asynchronous terminal. In that case, CTS and RTS can be used.

4.8 FXS analog interface specifications

There is an earth stud on the back panel of the ONE100D/M. Always connect this to the main protective earth.

- Connection of up to 4 or up to 8 analog telephone lines thus providing up to 8 analog voice interfaces.
- Connector: RJ45 connector, 1 connector per FXS
- Line impedance: 600 Ω or complex
- Frequency range of the ringing signal: 16Hz to 70 Hz
- Voltage of the ringing signal: > 37,4VRMS for a load of 1 REN (6,93K + 8µF@ 20Hz) in the frequency range
- Line current: 27 mA maximum for a line resistance <1000 Ω
- Polarity inversion of the TIP and RING pins
- Line current <2mA in the power-down mode
- Q.23 dialing
- Ringer Equivalency Number (REN): 1
- Cable to be used: unshielded cable with one twisted pair

The following table shows the connector layout of the RJ45 FXS connector:

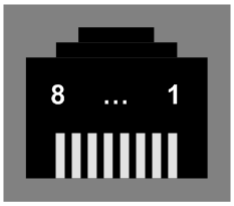
Pin	Signal	Figure
1	not connected	
2	not connected	
3	not connected	
4	ring	
5	tip	
6	not connected	
7	not connected	
8	not connected	

4.9 FXO analog interface specifications

There is an earth stud on the back panel of the ONE100D/M. Always connect this to the main protective earth.

- The FXO module enables the connection of 1 analog telephone line.
- Connector: RJ45 connector, 1 connector per FXO
- Cable to be used: unshielded cable with one twisted pair

The following table shows the connector layout of the RJ45 FXO connector:

Pin	Signal	Figure
1	not connected	
2	not connected	
3	not connected	
4	ring	
5	tip	
6	not connected	
7	not connected	
8	not connected	

5 Technical characteristics

This chapter describes technical characteristics of the ONE100D/M. The following gives an overview of this chapter:

- 5.1 - Power requirements on page 51
- 5.2 - Dimensions on page 51
- 5.3 - Environmental compliance on page 52

5.1 Power requirements

Power adapter to be used: Switched Power Module 100-240 VAC, 20W, Vout=12 Vdc, Iout=2,2 A.

Do not use another type of power supply than the one recommended by OneAccess.

5.2 Dimensions

- Height: 68 mm
- Width: 275 mm
- Depth: 152 mm
- Weight: 1 kg

5.3 Environmental compliance

Storage conditions:

The following conditions apply:

Storage conditions	Values
Temperature	- 25 °C <= T <= 55 °C
Relative humidity (HR)	5% <= HR <= 80%
Absolute humidity	<= 24g / m³
Altitude	<= 2500m

Operating conditions:

The following conditions apply:

Operating conditions	Values
Temperature	0 °C <= T <= 45 °C
Relative humidity	5% <= HR <= 80%
Absolute humidity	<= 24g / m³
Altitude	<= 2500m

6 Installing the ONE100D/M

This chapter explains how to install the ONE100D/M. The following gives an overview of this chapter:

- 6.1 - Opening and closing the housing on page 55
- 6.2 - Installing the WLAN antenna on page 56
- 6.3 - Mounting the ONE100D/M on a wall on page 57

6.1 Opening and closing the housing

When you want to change the DIP switch settings, you have to open and close the housing. This section explains how to do so.

Opening the housing

To open the housing of the ONE100D/M, proceed as follows:

Step	Action
1	Disconnect the external power supply.
2	Unfasten both rear panel screws and remove them.
3	Unclip the lower part of the front panel.
4	Remove the cover.

Closing the housing

To close the housing of the ONE100D/M, proceed as follows:

Step	Action
1	Replace the cover.
2	Fix the lower part of the front panel.
3	Fasten both rear panel screws.
4	Reconnect the external power supply.

6.2 Installing the WLAN antenna

The WLAN antennas have been installed in the factory. Raise them in a vertical position. The following picture shows a ONE100D/M with raised antennas:

6.3 Mounting the ONE100D/M on a wall

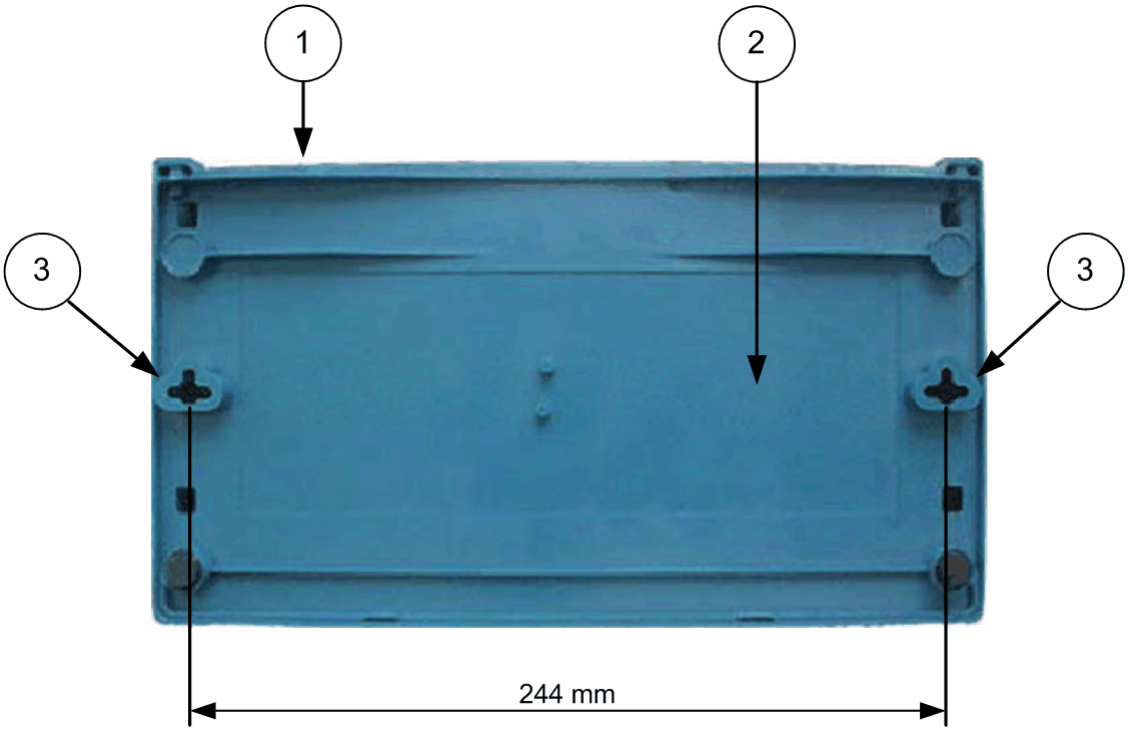
Procedure

The backpanel of the ONE100D/M has 2 notches in order to enable wall mounting. Refer to the figure below, for the position of these notches. By installing two screws at the required distance, the router can be hung on any vertical surface.

In order to do so, proceed as follows:

Step	Action
1	Drill two holes in the wall, according to the following specifications: • hole diameter: 4 mm • distance between the holes: 244 mm • hole depth: at least 25 mm
2	Insert two wall plugs in the holes. The plugs should have the following dimensions: • diameter: 4 mm • length: 20 mm
3	Turn two screws in the plugs. Leave a distance of 5 mm between the wall and the head of the screw.
4	Slide the ONE100D/M over the screws until it touches the wall, and gently push it down. If necessary, adjust the screws in the notches of the router.

Parts of the ONE100D/M



Part	Description
1	Backpanel of the ONE100D/M
2	Bottom plate
3	Notches

7 Powering up the ONE100D/M

Power up

To power up the ONE100D/M, always follow these steps:

- Connect the DC power input jack from the power supply to the DC power input of the rear panel of the router.
- Connect the power supply to the AC mains (100-240 V AC).

Self test

A few seconds after the power is switched on, the ONE100D/M performs a series of self-tests and loads the software into memory (RAM), during which the *Status* LED on the front panel blinks.

At the end of the software loading, after about 30 seconds, if:

- the *Status* LED remains green continuously, it means that the software initialization was successful.
- the *Status* LED blinks, it means that:
  - the software was absent,

  or,
  - there was an error during the software loading process.

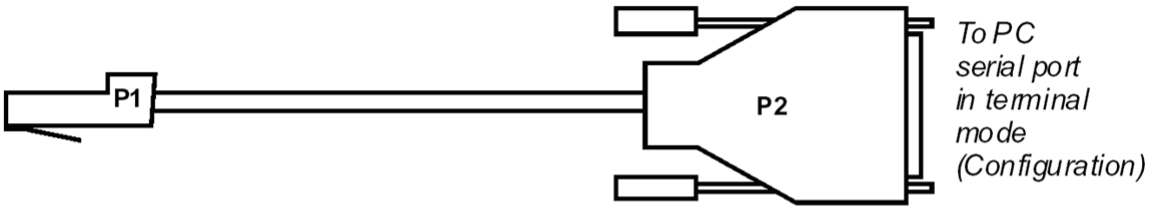
Refer to the OneOS User Manual for more information.

Annex

Annex A: Console cable

The following figure shows the console cable assembly:

Catalog reference: **4 022 332 B 00 Ed A**



RJ45 - P1	SIGNAL	SUB-D 9 Pts Female - P2
1	TX	2
2	RX	3
3	GND	5

Annex A: Console cable

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